TEST REPORT
UL 1647
Motor-Operated Massage And Exercise Machines

Job Number.....:	AOC250917001S
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Applicant's name.....:	**HYTTO PTE. LTD.**
Address.....:	152 Beach Road, #11-05 Gateway East, Singapore 189721
Manufacturer's name.....:	HYTTO PTE. LTD.
Address.....:	52 Beach Road, #11-05 Gateway East, Singapore 189721
Test specification:	
Standard.....:	UL 1647 Sixth Edition, Dated August 3, 2015, Re: July 30, 2020
Test procedure.....:	UL test report
Non-standard test method.....	N/A
Test Report Form No.....:	UL1647_2020
Test Report Form(s) Originator.....:	AOCE
Master TRF.....:	Dated 2020-10
Test item description ..... :	Velvo
Trade Mark.....:	Lovense
Model/Type reference.....:	Velvo
Ratings ..... :	DC 5V, 1A, 5W

Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	2025-09-10
Date (s) of performance of tests..... :	From 2025-09-10 to 2025-09-17

General product information:

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The product covered in this report is a Velvo;

Relevant Technical consideration：

-Mass of equipment (kg): 0.935

-Maximum ambient temperature: 25°C

-The test data is based on the model: Velvo.

-The charger for power supply the Velvo had UL 62368-1 approved.

Copy of marking plate: **N/A**

TEST SUMMARY PAGE

Required Tests	Section No.	Verdict
Leakage-Current Test	45	Pass[ ] N/A[√]
Leakage Current Following Humidity Conditioning	46	Pass[ ] N/A[√]
Starting-Current Test	47	Pass[ ] N/A[√]
Input Test	48	Pass[√] N/A[ ]
Temperature Test	49	Pass[√] N/A[ ]
Surface-Temperature Test	51	Pass[√] N/A[ ]
Dielectric Voltage-Withstand Test	52	Pass[ ] N/A[√]
Resistance to Moisture Test	53	Pass[ ] N/A[√]
Resistance to Moisture Tests for Massage Type Footbaths	54	Pass[ ] N/A[√]
Flooding of Live Parts Test	55	Pass[ ] N/A[√]
Fluid-Handling Tubing Tests	56	Pass[ ] N/A[√]
Backflow Prevention Test .	57	Pass[ ] N/A[√]
Switch and Control Test	58	Pass[ ] N/A[√]
Thermostat Test	59	Pass[ ] N/A[√]
Strain-Relief Test	60	Pass[ ] N/A[√]
Strain-Relief Clamp Test	61	Pass[ ] N/A[√]
Flexing and Twisting Test	62	Pass[ ] N/A[√]
Operational Test	63	Pass[√] N/A[ ]
Abnormal-Operation Test	64	Pass[√] N/A[ ]
Permanence of Marking Test	65	Pass[√] N/A[ ]
Polymeric Enclosure Tests	66	Pass[√] N/A[ ]
Polymeric Materials Used as Structural Support	67	Pass[ ] N/A[√]
End-Product Arc Resistance	68	Pass[ ] N/A[√]
Abnormal Overload	69	Pass[ ] N/A[√]
Shiatu-Type Massager Entrapment Test	70	Pass[ ] N/A[√]
Emergency Stop Switch Endurance Test	71	Pass[ ] N/A[√]
Treadmill Belt Speed Test	72	Pass[ ] N/A[√]
Dog Treadmill – Safety Key Control Test	73	Pass[ ] N/A[√]
Solenoids	74	Pass[ ] N/A[√]
General Purpose Transformers	75	Pass[ ] N/A[√]
Thermoplastic Motor Insulation Systems	76	Pass[ ] N/A[√]
Treadmills – Interoperability	77	Pass[ ] N/A[√]

General:

- Results of the tests indicate the specimens conform to applicable test criteria.

- Determination of the result includes consideration of measurement uncertainty from the test equipment and methods.
- The most unfavourable results are to be recorded.

TABLE: Components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
PCB	SHENZHEN LIANCHUANG ELECTRONICS CO LTD	LC-4	V-0 130°C	IEC/EN 60335-1 IEC/EN 60335-2-32 UL 94	Tested with appliance UL E318531
Internal wire	DONGGUAN MINGXIU ELECTRONICS TECHNOLOGY CO LTD	--	Min. 26AWG, min. 300V, min. 80℃	UL 758	UL E492150
Battery	HUIZHOU ADVANCED POLYMER BATTERY TECHNOLOGY CO., LTD.	182040	700mAh, 7.4V 5.18Wh	IEC 62133-2	CE
DC motor	SHENZHEN XINGSHENGDA MOTOR CO.,LTD	XR-GM24R370-64-LX	DC 3-12V 200±10％rpm	IEC/EN 60335-1 IEC/EN 60335-2-32	Test with appliance

Section 45 – Leakage-Current Test N/A

Test Method:

As specified in the standard.

Test Condition:

1. Input: _____V _____Hz

2. Ambient: _____°C

3. Load: Maximum normal load

4. Operated until thermal stabilization.

Before, during, and after the operation, the leakage current is monitored.

Test Result:

[ ] Measured Imax= MIU (Limited: 0.5MIU)

Conclusion:

This result (complied / did not comply) with the requirements.

Section 47 – Starting current N/A

Test Method:

As specified in the standard.

Test Condition:

1. Input: _____V _____Hz

2. Ambient: _____23.5_____°C

3. Load: _____Maximum normal load_____

4. _____Started 3 times when connected to 15A ordinary fuse protected supply,_____

Test Result:

[ ] Fuse not open.

[ ] Overload protector not tripped

Conclusion:

This result (complied / did not comply) with the requirements.

Section 48 – Input Test

Test Method:

As specified in the standard.

Test Condition:

The sample was connected to a 100 volt, single phase, 60 Hz source or 240 volt, single phase, 50 Hz source of supply. The input current and wattage to the sample were measured under battery charging model
The current or wattage input to an appliance shall not be more than 110 percent of the rated value when the appliance is operated under the condition of maximum normal load.

2. Ambient: 23.8 °C

3. Load: Maximum normal load

Test Result:

[√] Measured P= 5.85 W, Pr= 7.0 W (Limit: 110% Pr)

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Section 49 – Temperature Test

Test Method:

As specified in the standard.

Test Condition:

1. Input: DC 5 V / Hz

2. Ambient: 23.8 °C

3. Load: Maximum normal load

4. Operated for 20 minutes

Test Result:

[√] No excessive temperature rises. (See appended temperature record)

[√] Protective device not open the circuit during the temperature test.

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Section 49 – Temperature Test（Cont'd）

Load: Maximum normal load

RESULT:

Channel No.	Location	Actual Temp.* (ºC)	Temp. rise (K)	Limit of Temp. rise (K)
101	Ambient	23.8	--	Ref.
102	Plastic enclosure under battery	38.1	14.3	60
103	Plastic enclosure under DC motor	47.2	23.4	60
104	Motor surface	52.9	34.1	80
106	Battery surface	51.9	32.1	Ref.
107	Rubbery surface	35.8	12.0	Ref
108	Control panel	31.5	7.7	Ref.
109	Plastic enclosure, inside	41.2	17.4	Ref.
110	Plastic enclosure, outside	35.1	11.3	60
111	Metal enclosure, inside	46.1	22.3	Ref.
112	Metal enclosure, outside	34.2	10.4	50
113	PCB near U1	51.6	27.8	105
114	Knob	30.8	7.0	40

Section 51 – Surface Temperatures Test

Test Method:

As specified in the standard.

Test Condition:

1. Input: DC5 V / Hz

2. Ambient: 23.9 °C

3. Load: Maximum normal load

4. Operated until thermal stabilization.

Test Result:

[√] No excessive temperature rises. (See appended temperature record)

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Section 51 – Surface Temperatures Test（Cont'd）

Load: Maximum normal load

RESULT:

Channel No.	Location	Actual Temp.* (ºC)	Temp. rise (K)	Limit of Temp. rise (K)
101	Ambient	23.8	--	Ref.
102	Handle	38.1	14.3	60
103	knob	37.6	13.8	60
104	Metal enclosure	42.0	18.2	40
105	Plastic enclosure	40.6	16.7	60

Section 52 – Dielectric Voltage-Withstand Test N/A

Test Method:

As specified in the standard.

Test Condition:

1. Input: / V / Hz

2. Ambient: 23.8 °C

3. Load: /

4. Test voltage: 1000 V between live parts and non-current-carrying metal parts at operating temperature.

Test Result:

[√] No breakdown occurred.

Conclusion:

This result (complied / did not comply) with the requirements.

Test Item: Section 58– Switch and Control Test N/A

Test Method:

As specified in the standard.

Test Condition:

1. Input: _____V _____Hz

2. Ambient: 23.8 °C

3. Load: Maximum normal load: 5Kg

4. Switch subjects to 50 cycles of making and breaking operation, 10 cycles/min, the rotor of the motor is locked in position.

Test Result:

[√] No electrical or mechanical malfunction or breakdown of the device.

[√] No undue burning or pitting of the contacts

[√] Fuse not open.

Conclusion:

This result (complied / did not comply) with the requirements.

Section 60– Strain-Relief Test N/A

Test Method:

As specified in the standard.

Test Condition:

1. Input: / V / Hz

2. Ambient: °C

3. Load: /

4. A direct pull of 35lb (156N) applied to supply cord for 1 min.

Test Result:

[ ] No movement of the supply cord indicate that stress on the connections.

Conclusion:

This result (complied / did not comply) with the requirements.

Section 63 – Operational Test

Test Method:

As specified in the standard.

Test Condition:

1. Input: DC5 V / Hz

2. Ambient: 23.8 °C

3. Load: Maximum normal load

4. Operated with respect to the Intended uses of the appliance.

Test Result:

[√] No result in a risk of fire, electric shock, or injury to person.

Conclusion:

This result (complied /~~did not comply~~) with the requirements.

Section 64 – Abnormal-Operation Test

Test Method:

As specified in the standard.

Test Condition:

1. Input: DC5 V / Hz

2. Ambient: 23.8 °C

3. Load: Maximum normal load

4. Short-circuiting either the rectifier or the electrolytic capacitor as specified.

Test Result:

Component	Failure	Observation	Result
C1	SC	The appliance shut down immediately, no damage, no hazards.	P
Q3(G-S)	SC	The appliance shut down immediately, no damage, no hazards.	P
Q3(G-D)	SC	The appliance shut down immediately, no damage, no hazards.	P
Q3(D-S)	SC	The appliance shut down immediately, no damage, no hazards.	P
R1	SC	The appliance normal operation, no damage, no hazards.	P
U1 (pin1-4)	SC	The appliance shut down immediately, no damage, no hazards.	P
U1 (pin1-8)	SC	The appliance shut down immediately, no damage, no hazards.	P
Q1(G-S)	SC	The appliance shut down immediately, no damage, no hazards.	P
Q1(G-D)	SC	The appliance shut down immediately, no damage, no hazards.	P
Q1(D-S)	SC	The appliance shut down immediately, no damage, no hazards.	P
C4	SC	The appliance shut down immediately, no damage, no hazards.	P
R6	SC	The appliance normal operation, no damage, no hazards.	P

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Section 65 – Permanence of Marking Test

Test Method:

65.2 OVEN-AGING TEST – Three samples of the label applied to test surfaces as in the intended application are to be conditioned for 24 hours in an oven maintained at the temperature specified in Table 65.1.

Test Result:

After being subjected to the conditions described in 65.2 – 65.6, a pressure sensitive label or a label secured by cement or adhesive is considered to be of a permanent nature if immediately following removal from each test medium and after being exposed to room temperature for 24 hours following removal from each medium:
a) Each sample demonstrates good adhesion and the edges are not curled.
b) The label resists defacement or removal as demonstrated by scraping across the test panel with a flat steel blade, held at right angles to the test panel.
c) The printing is legible and is not defaced by rubbing with thumb or finger pressure.

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Section 66 – Polymeric Enclosure Tests

Test Method:

As specified in the standard.

Test Condition:

1. Input: DC5 V / Hz

2. Ambient: 23.8 °C

3. Load: /

4. Placed in a full-draft circulating-air oven at [70]°C for 7 hours and cooled to room temperature.

Test Result:

[√] No reduction of spacing.

[√] No contact with live parts or internal wring.

[√] No movement of the supply cord indicate that stress on the connections.

[√] No defeating the integrity of the enclosure

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Section 67 – Polymeric Materials Used as Structural Support N/A

Test Method:

As specified in the standard.

Test Condition:

1. Input: _____V _____Hz

2. Ambient: 23.5 °C

3. Load: /

4. Conditioned as the mold stress-relief distortion test in Sec. 66.1.2 and subjected to the impact tests in Sec. 66.2.1, after each test the input current is monitored.

Test Result:

[ ] The input current is not greater than 150% of the normal operated condition.

Conclusion:

This result (complied / did not comply) with the requirements.

Section 6.13 – Speed control — Limited short-circuit N/A

Test Method:

As specified in the standard.

Test Condition:

1. Input: _____V _____Hz

2. Ambient: _____°C

3. Load: Maximum normal load

4. Six samples tested in short-circuit condition. Three samples at the maximum speed, and the other three samples at the minimum speed.

Test Result:

[] No ignition of the cotton. No fire hazard.

Conclusion:

This result (complied / did not comply) with the requirements.

Pictures

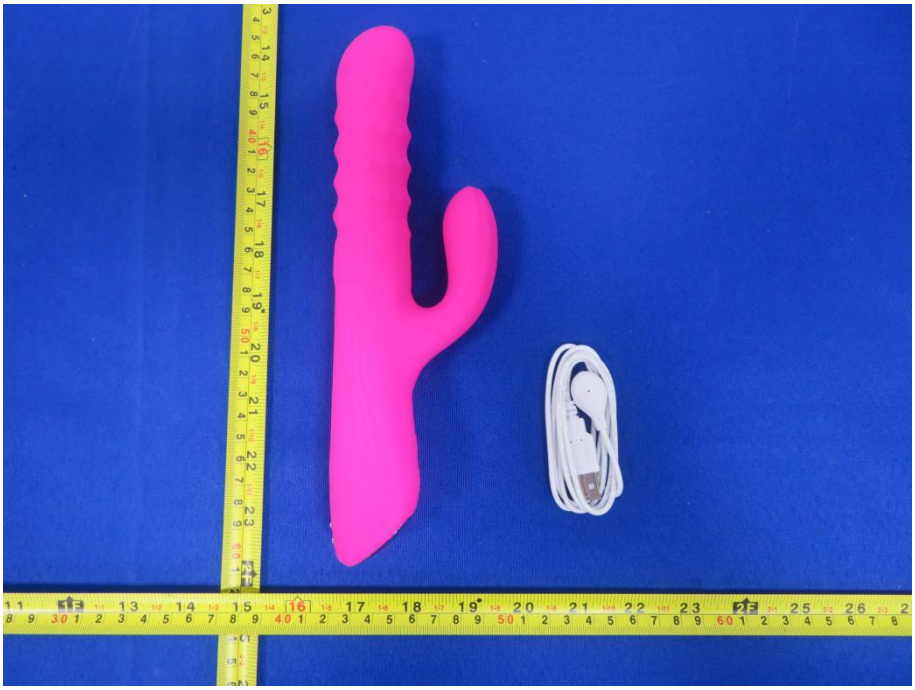

Figure 1

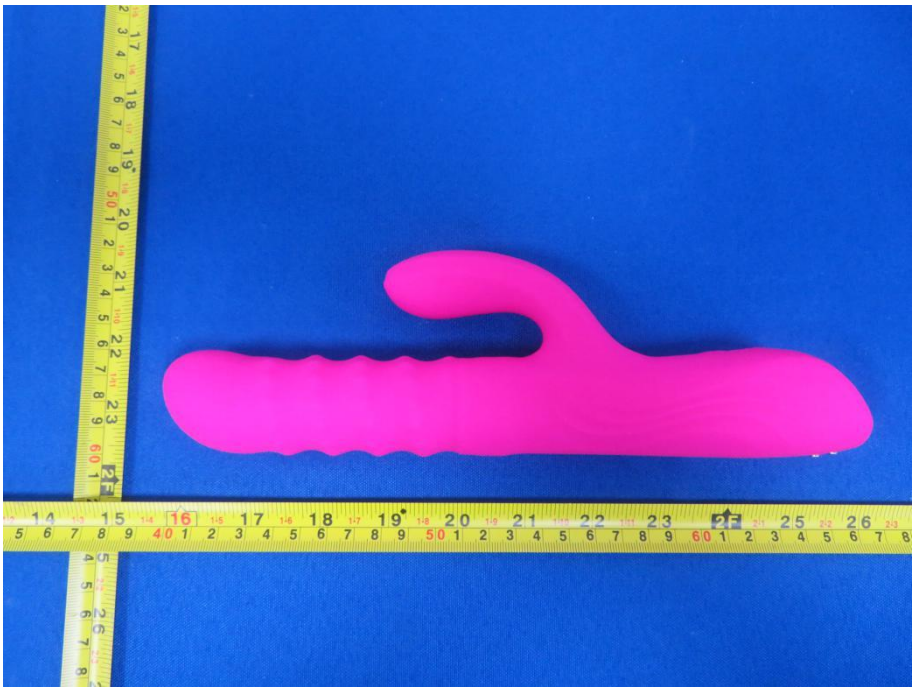

Figure 2

Pictures

Figure 3

Figure 4

Pictures

Figure 5

Figure 6

********** End of report **********